

Meeting Summary
17-mile RI/FS Modeling Meeting
June 29, 2016
10:00 AM to 3:00 PM

Participants

EPA Region 2

Jennifer LaPoma
Eugenia Naranjo
Alice Yeh
Michael Sivak – by phone
Jonathan Clough (Warren-Pinnacle)
Ed Garland (HDR)
James Wands (HDR)
Scott Kirchner (CDM)
Aaron Frantz (CDM)

CPG

Rob Law (dmi)
John Toll (WW)
Mike Johns (WW)

Introductions/Opening Remarks: There were no opening remarks; group proceeded directly to the bioaccumulation modeling topics on the agenda.

- **Carp ventilation exposure pathway (R2 Comments 569, 578, 582, 591, 602)**
 - CPG presented the newly compiled literature supporting our hypothesis that carp ventilation of HOCs is an important exposure pathway.
 - R2 expressed concern that the carp ventilation uptake coefficient is a calibration variable that is not constrained by empirical data.
 - **Proposed Action:**
 - R2 will review the information CPG presented.
 - R2 and CPG will talk again after R2 has time to review the information CPG presented.
 - CPG to consider the following:
 - Using additional PCB homologues or other newly added CFT-modeled COPCs to verify that the carp ventilation uptake coefficient behaves as expected over a range of log K_{ow} values.
 - Attempting to calibrate the carp model without the carp ventilation uptake coefficient, and share the results with R2.
 - Review of carp bioaccumulation modeling for other sites.
- **Benthic feeding guild biomass (R2 comments 383, 573, 581, 608, 614, 615, 616, 617)**
 - CPG provided information about benthic biomass at a number of locations varying along a salinity gradient. Showed that organisms are at the small end of their size ranges under estuarine conditions (true across taxa).
 - CPG proposed that Chesapeake Bay dataset is the best available representation of

- LPRSA organism weights because the individual weights are low and it is the most extensive dataset.
- R2 acknowledged CPG's arguments and proposed a small-group meeting with the Region's benthic expert(s); Jonathan Clough wants to participate.
- **Proposed Action:**
 - Jennifer LaPoma and Rob Law will set up the benthic ecologists' meeting.
 - R2 will share the assumptions and calculations for the benthic biomass by feeding guild figures included in its RI comments.
 - CPG to consider sharing its updated results using soft tissue weights for *Corbicula* spp.
 - CPG to consider putting bounds on individual biomass estimates and feeding strategy assumptions.
- **Bioaccumulation levels in detritivores and deposit feeders (R2 comments 575, 576, 580, 583, 590, 595, 610)**
 - CPG asked R2 to provide the data and BSAFs presented in its comments.
 - R2 told CPG that:
 - The BSAFs presented in its comments were from the 2007 Preliminary Draft Early Final Action Focused Feasibility Study.
 - *Correction – CPG has confirmed that R2's BSAFs are from the 2007 Contamination Assessment and Reduction Program (CARP) report "A Model for the Evaluation and Management of Contaminants of Concern in Water, Sediment, and Biota in the NY/NJ Harbor Estuary: Contaminant Fate & Transport & Bioaccumulation Sub-models."*
 - The data used to generate the BSAFs presented in its comments are from the CARP database and available by mail upon request through www.carpweb.org (CPG has the CARP database).
 - R2 noted that tissue concentrations in deposit feeders exposed to homogenized 0-15 cm sediment in laboratory bioaccumulation tests are higher than tissue concentrations in carp. R2 asked CPG to consider about why this is so.
 - R2 asked CPG to "look at the *Nereis virens* bioaccumulation test data and think about why the BSAF is so low."
 - **Proposed Action:**
 - CPG to consider the following:
 - Conducting an independent review of the CARP dataset.
 - Independently reanalyzing the CARP dataset to check R2's BSAF calculations.
 - Re-evaluating R2's draft RI comments re: bioaccumulation levels in detritivores and deposit feeders after it completes its review and reanalysis of the CARP data.
 - Reviewing the *Nereis virens* bioaccumulation test data.
- **Approach to passing data from the CFT model to the bioaccumulation model (R2 comments 586, 592, 611, 612)**

- CPG and R2 briefly discussed updates that will be made to the CPG's CFT model (specifically to the OC model) that affect chemical partitioning in the water column.
 - R2 asked the CPG to update the bioaccumulation model to ensure consistency with the updated CFT model.
 - CPG and R2 discussed three ways that CPG could update the bioaccumulation model to ensure consistency with the updated CFT model.
 - R2 indicated that any of the three ways that that CPG could update the bioaccumulation model would be acceptable as long as the results are consistent with the updated CFT model.
 - **Proposed Action:**
 - CPG to consider updating the bioaccumulation model to ensure consistency with the updated CFT model.
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- **Modeling detritus & sediment exposure depth (R2 comments 570, 571, 572, 599, 611)**
 - CPG acknowledged receipt of the dispute resolution letter.
 - No further discussion
 - **Proposed Action:** No proposed action
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- **Recalibration**
 - a. **Spatial scale (R2 comments 408, 574, 577, 579, 594, 597, 600, 601, 603, 613)**
 - CPG sought clarification on how R2 used the term calibration in its comments.
 - i. R2 clarified that it broadly used the term calibration to refer to the entire model calibration process, including model corroboration/ verification.
 - ii. R2 clarified that when it told CPG to use data for calibration, it meant to use the data in the broadly defined calibration process (but not necessarily as calibration data).
 - CPG sought clarification on R2's reasons for calibrating at a finer spatial scale and how it made tradeoffs between finer spatial resolution and higher uncertainty associated with the smaller calibration datasets.
 - R2 asked CPG to consider recalculating whole body tissue concentrations from fillet samples using site-specific fillet-whole body tissue concentration ratios. CPG offered no objections and offered to consider it.
 - CPG described an approach for calibrating and verifying the model at a finer spatial scale. R2 considered CPG's proposed approach reasonable.
 - b. **Trophic guilds (R2 comments 384, 409, 568, 584, 585, 587, 592, 596, 604, 618)**
 - CPG confirmed that R2's comments about including trophic guilds in calibration meant using the data in the broadly defined calibration process (but not necessarily as calibration data).
 - R2 to reconsider whether small eel needs to be modeled separately, taking into account the importance of small eel as a prey species in the LPRSA.
 - c. **Temporal issues (R2 comments 588, 593, 605)**
 - CPG to consider refining the temporal correlation between bioaccumulation model inputs and tissue concentration data collection.

- CPG to check with Jon Arnot and Frank Gobas to find out whether they've made improvements to the temperature-dependent growth rate equations (equations 22 and 23) in their model (Arnot and Gobas 2004).
- CPG to consider ways to incorporate additional tissue concentration data into the broadly defined calibration process.
- d. Sensitivity & uncertainty analysis (R2 comments 598, 606, 607)**
 - R2 asked CPG to do test runs with the recalibrated model to see how rapidly depuration is predicted to occur if chemical concentration inputs are abruptly set to zero.
 - R2 asked CPG to run projections with alternative model recalibrations, as a way to examine sensitivity of remedial alternatives to modeling uncertainties.
 - CPG offered no objections and offered to consider R2's sensitivity & uncertainty analysis requests.
- **Proposed Action (Recalibration):**
 - R2 to consider whether small eel needs to be included in the bioaccumulation model or not, taking into consideration its importance as prey in the LPRSA food web.
 - CPG to consider the following:
 - Update the link between the CFT-OC model and the bioaccumulation model, after the revised CFT-OC model has been completed.
 - Recalculate whole body tissue concentrations from fillet samples using site-specific fillet-whole body tissue concentration ratios.
 - Recalibrate the bioaccumulation model after the CFT model is recalibrated.
 - Recalibrate the bioaccumulation model with greater spatial and temporal resolution using some data for calibrating and other data for testing and verifying the model.
 - Include other chemicals modeled with the CFT model in the bioaccumulation model recalibration.
 - Analyze sensitivity of remedy effectiveness (for all remedial action alternatives) to bioaccumulation model uncertainties.

References

Arnot JA, Gobas FAPC. 2004. A food web bioaccumulation model for organic chemicals in aquatic ecosystems. *Environ Toxicol Chem* 23:2343-2355.